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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/007,234	10/22/2001	Avinash Dalmia	03141-P0378A	3660

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EXAMINER	
OLSEN, KAJ K	

ART UNIT	PAPER NUMBER
1753	3

DATE MAILED: 12/15/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

3KB

Office Action Summary	Application No. 10/007,234	Applicant(s) DALMIA ET AL.	
	Examiner Kaj Olsen	Art Unit 1753	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-17 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-17 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☒ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

13)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2.
4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Double Patenting

1. Claims 13 and 14 are objected to under 37 CFR 1.75 as being a substantial duplicate of claims 3 and 11 respectively. Similarly, claim 16 is a substantial duplicate of both claims 14 and 11, and claim 17 is a substantial duplicate of claim 12. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

Oath/Declaration

2. The oath or declaration is defective. A new oath or declaration in compliance with 37 CFR 1.67(a) identifying this application by application number and filing date is required. See MPEP §§ 602.01 and 602.02.

> The oath or declaration is defective because:
> Non-initialed and/or non-dated alterations have been made to the oath or declaration. See 37 CFR 1.52(c).

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 1-17 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

5. Independent claims 1, 13, and 16 all specify that electrolyte material be spaced apart from the surface of the substrate. However, it doesn't appear from the figures that this is the case. In particular, figure 2 would appear to show that the electrolyte 30 is in contact with a surface of the substrate. It would appear that the electrolyte is only spaced apart from the substrate wherever the conductive film or a notch is located. The claims don't specify that distinction and it is unclear how to interpret a claim limitation that doesn't appear to read on the applicant's disclosed subject matter.

6. These claims are also indefinite because they specify that the film define a passage for *receiving gas*. What does this mean? It would appear that the conductive film at best would merely extend the area of the gas passage and would only extend the area wherever the film is placed (i.e. areas not having film 40 wouldn't have an expanded passage). The majority of the passage area would appear to be defined by the notch itself. However the notch is defined as being for *holding the gas* while the film provides for *receiving gas*. This distinction between the functioning of each element is unclear and clarification is requested.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

8. Claims 1-4, 6, 8, 9, 13, and 15 are rejected under 35 U.S.C. 102(e) as being anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Shiratori (USP 6,218,036 B1).

9. With respect to the claims as best understood, Shiratori discloses an electrochemical cell that comprises a substrate (5, 6) having notches for holding gas, an electrolytic material (8, 18) extending over the surface of the substrate, and a film of conductive material (7, 9) placed between and in contact with both the substrate surface and the electrolyte material (fig. 1, 2A, and col. 2, lines 30-58). Although the cell is not disclosed as being a sensor, that is only the intended use of the apparatus and the intended use need not be given further due consideration in determining patentability.

10. With respect to the second film of conductive material, Shiratori has two electrodes (7, 9) and either one of those electrodes reads on the broadly specified "on at least one area of said notch".

11. With respect to the claims specifying either deposition or etching to construct the sensor, the determination of patentability for the claim is based on the product itself. Because the product of the claim is identical to the invention of Shiratori the process from which it was made is the same as or obvious over the process utilized by Shiratori (see *In re Thorpe*, 777 F.2d 695, 698).

12. Claims 1, 3, 4, 6-9, and 11-17 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Sugama et al (USP 5,492,611).

13. Sugama discloses an electrochemical sensor comprising a substrate 201 having at least one notch in said substrate (fig. 2(c)), an electrolyte 206 extending over the surface, and a conductive film (204, 205) placed in contact with the surface and the electrolyte material (col. 2,

lines 7-40). Although the electrolyte isn't always spaced apart from the substrate (it is only spaced apart where the conductive films reside), it doesn't appear the instant invention requires the electrolyte be spaced apart wherever the conductive film is not present (see 112 rejection above).

14. With respect to the second film of conductive material, electrode 204 would read on this limitation. Said electrode is placed in said notch (fig. 2(c)).

15. With respect to the second electrolyte material, the distribution of electrolyte 206 mirrors the distribution of first and second electrolytes shown by the instant invention (i.e. electrolyte being placed both on top of the substrate over the conductive film 205 as well as in the actual notches over film 204). Although Sugama doesn't disclose its electrolyte as two separate entities, the claims make no distinction about how the electrolytes are distributed or that the electrolytes constitute different entities. The claims merely state that there are electrolytes that occupy different locations of the sensor and Sugama teaches this.

16. With respect to the electrolyte being a polymer or a solid, see col. 2, line 50 through col. 3, line 46.

17. With respect to the claims specifying either deposition, etching, or spin coating to construct the sensor, the determination of patentability for the claim is based on the product itself. Because the product of the claim is identical to the invention of Sugama the process from which it was made is the same as or obvious over the process utilized by Sugama (see *In re Thorpe*, 777 F.2d 695, 698).

Claim Rejections - 35 USC § 103

18. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

19. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

20. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sugama '611 in view of Clark et al (USP 5,194,133).

21. Sugama set forth all the limitations of the claim, but did not explicitly recite the use of glass as a substrate. Clark teaches in an alternate notched electrochemical sensor that materials other than silicon (which Sugama utilized) can find utility as a sensor substrate. One of those materials is glass (col. 2, lines 27-30). It would have been obvious to one of ordinary skill in the art at the time the invention was being made to utilize the teaching of Clark for the sensor of Sugama because the substitution of one known substrate material for another known substrate material requires only routine skill in the art. In addition, glass is a cheaper material than silicon and doesn't require the application of an insulating silicon dioxide coating. It also would have

been obvious to one of ordinary skill in the art at the time the invention was being made to utilize the teaching of Clark for the sensor of Sugama in order to provide a less expensive substrate that doesn't require surface treatment prior to use.

22. Claim 10 (and claims 7 and 8 in the alternative) is rejected under 35 U.S.C. 103(a) as being unpatentable over Sugama '611 in view of Kusanagi et al (USP 5,315,643).

23. Sugama disclose all the limitations of claim 10, but doesn't not explicitly set forth the use of Nafion as the electrolyte. However, the use of Nafion as an electrolyte is notoriously old in the art of gas sensing. In particular, Kusanagi disclose the use of Nafion polymer as the electrolyte for its gas sensor, which has the advantage of being able to be deposited as very thin layers (col. 4, line 43 through col. 5, line 3). A thin layer electrolyte would improve both the sensor signal (owing to the reduced resistance) and the sensor's response times (owing to the thin layer). It would have been obvious to one of ordinary skill in the art at the time the invention was being made to utilize the teaching of Kusanagi for the sensor of Sugama because the substitution of one known electrolyte material for another known electrolyte material requires only routine skill in the art, and in order to improve the sensor's response and response times.

Conclusion

24. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Southern, Yamada, and Kitajima disclose alternate electrochemical devices relevant to the claimed invention.

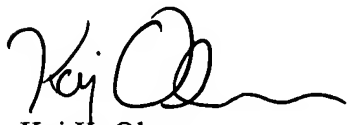
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kaj Olsen whose telephone number is (703) 305-0506. The

examiner can normally be reached on Monday through Thursday from 7:00 AM-4:30 PM. The examiner can also be reached on alternate Fridays.

If attempts to reach the examiner are unsuccessful, the examiner's supervisor, Mr. Nam Nguyen, can be reached at (703) 308-3322.

When filing a fax in Group 1700, please indicate in the header "Official" for papers that are to be entered into the file, and "Unofficial" for draft documents and other communications with the PTO that are not for entry into the file of this application. This will expedite processing of your papers. The fax number for regular communications is (703) 305-3599 and the fax number form after-final communications is (703) 305-5408.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist, whose telephone number is (703) 308-0661.



Kaj K. Olsen
Patent Examiner
AU 1753
December 12, 2003